

CEC MEXICO TECHNICAL WORKSHOP: EFFICIENCY, RENEWABLES AND GRID MANAGEMENT

Improving Energy Efficiency of Plug- Load Devices

Presented in Panel 4: Water and Energy Efficiency,
and Demand Response



Dr. G. P. Li

California Plug Load Research Center

California Institute for Telecommunications and Information Technology

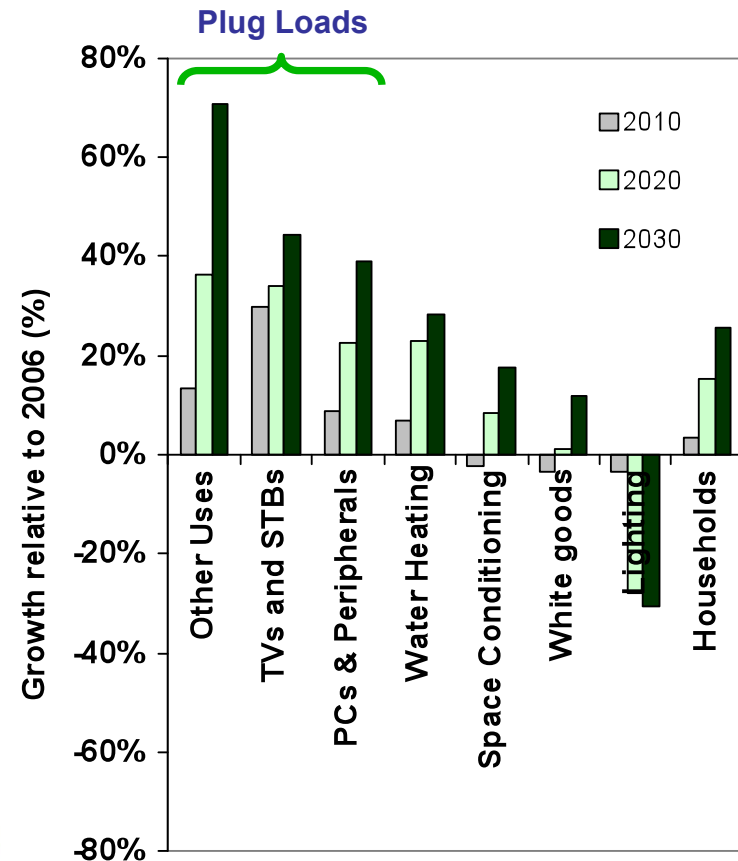


Creating Connections. Powering Innovation. Boosting Efficiency.



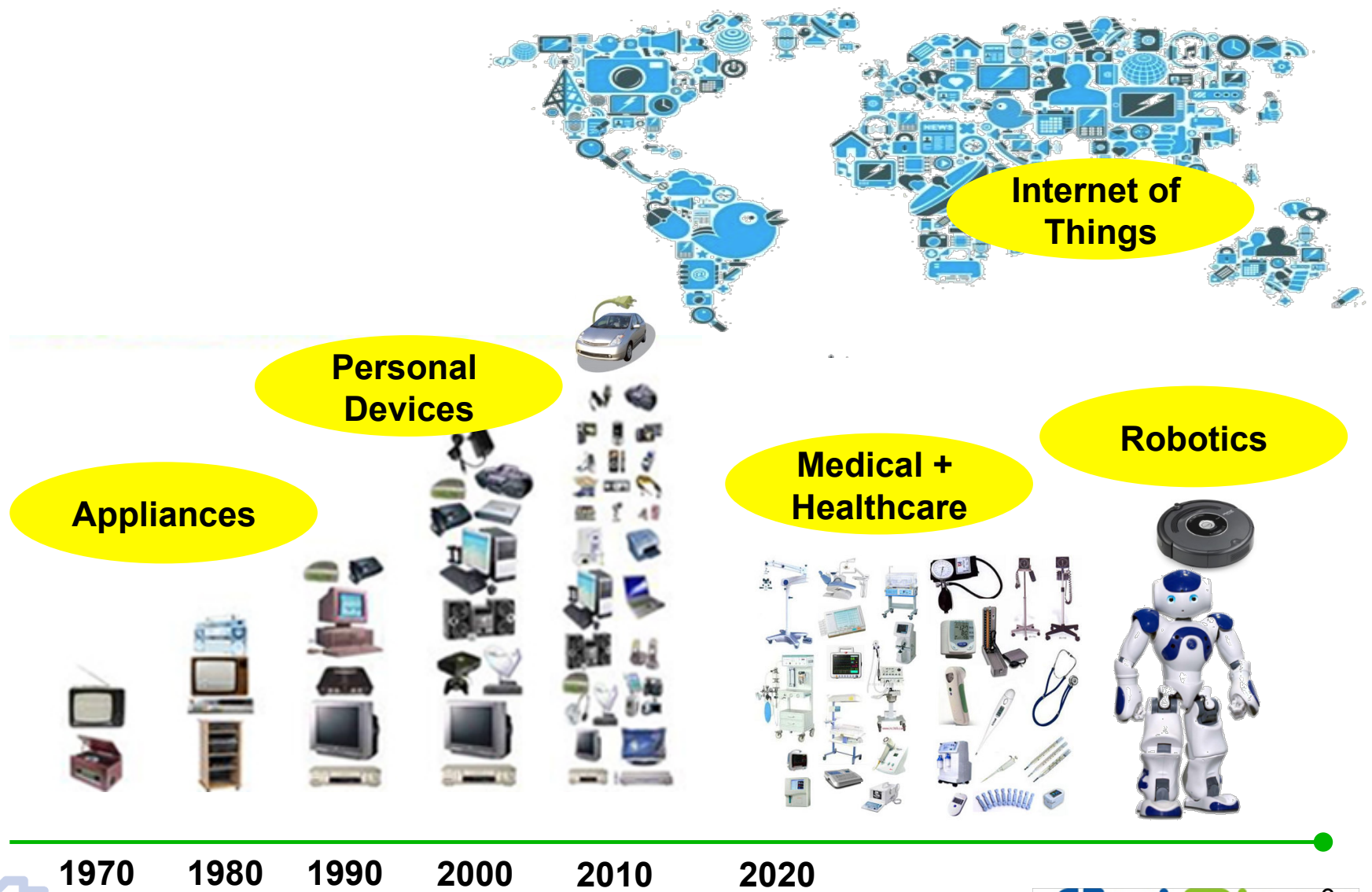
CalPlug Purpose

- **Help California and U.S. improve energy efficiency in appliances and electronic devices**
- **In the residential and commercial sectors**
- **Through research, demonstration, education**
- **About engineering, incentives, codes and standards, and user behavior**



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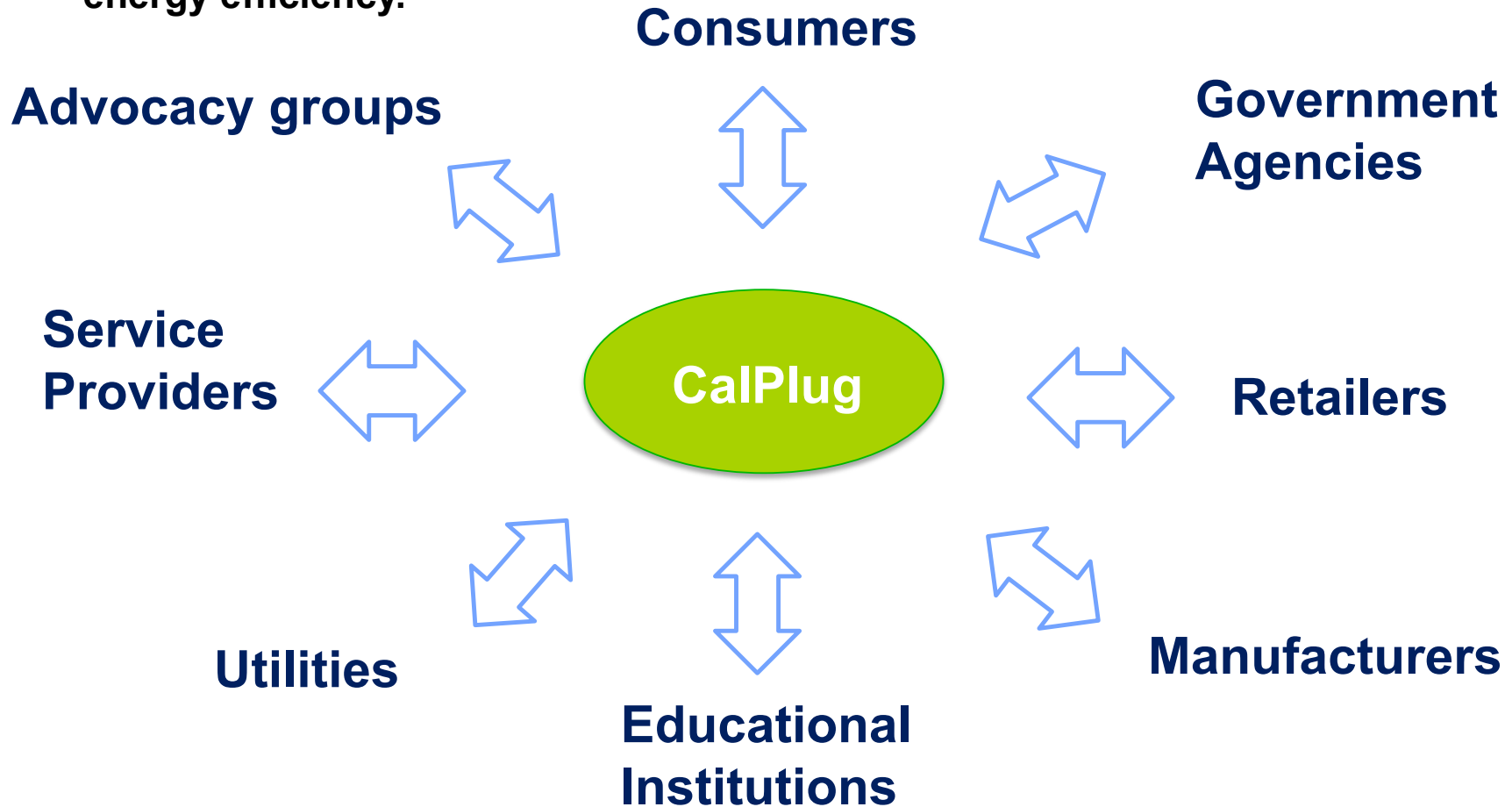
Residential and Commercial Plug Loads



1970 1980 1990 2000 2010 2020
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Center Interactions with Key Stakeholders

Neutral playing ground for diverse groups with various challenges and approaches to explore common objectives and goals with the ultimate goal of energy efficiency.

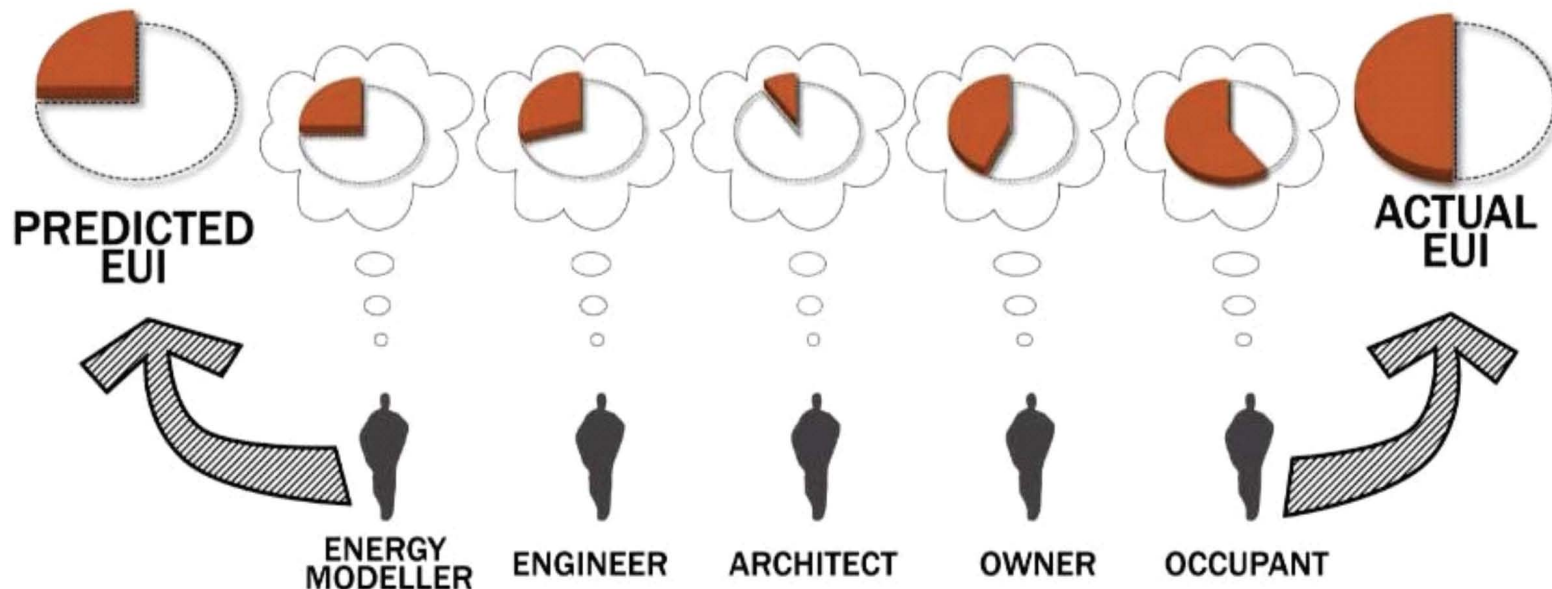


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Integrating ZNE Building Design with Personal Energy Footprint Management

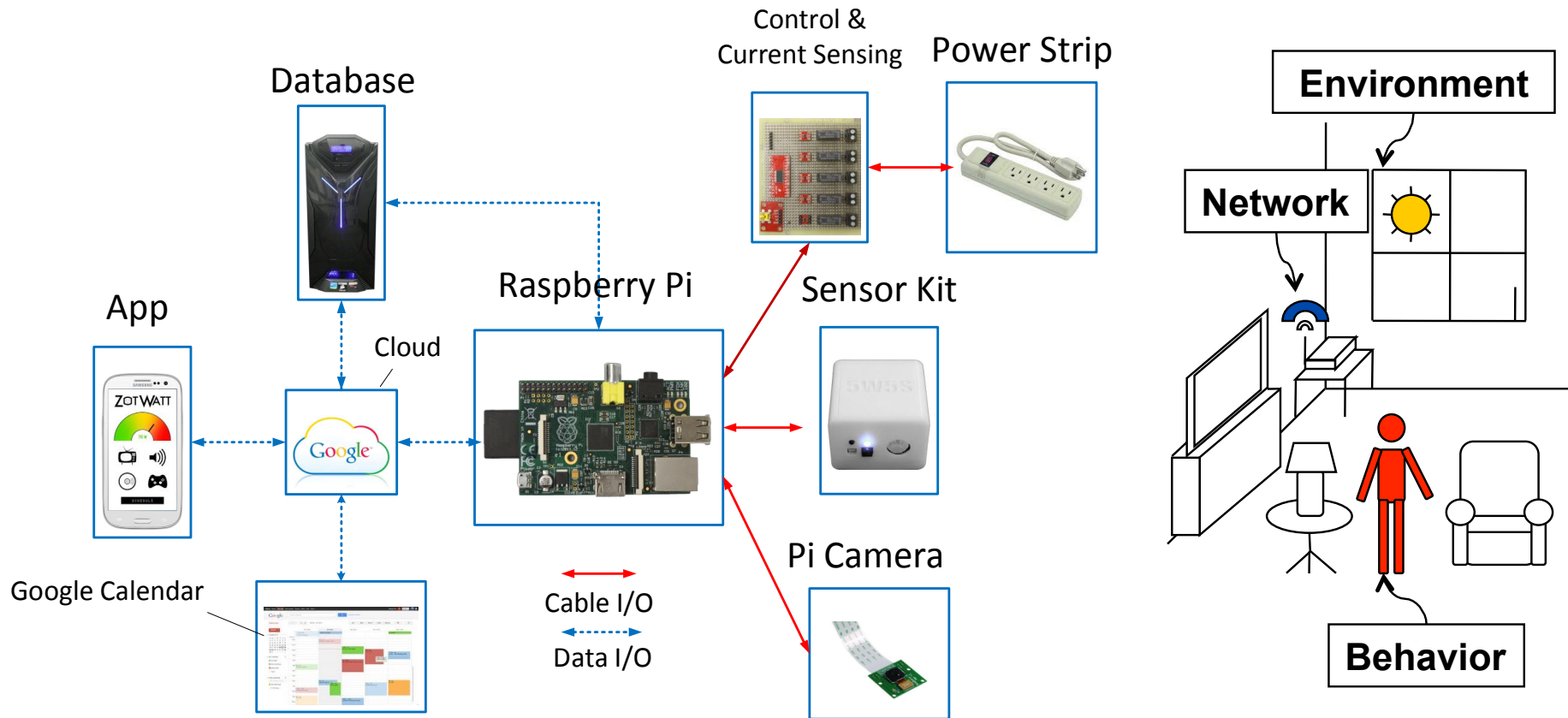
ENERGY USE

PREDICTED vs. ACTUAL



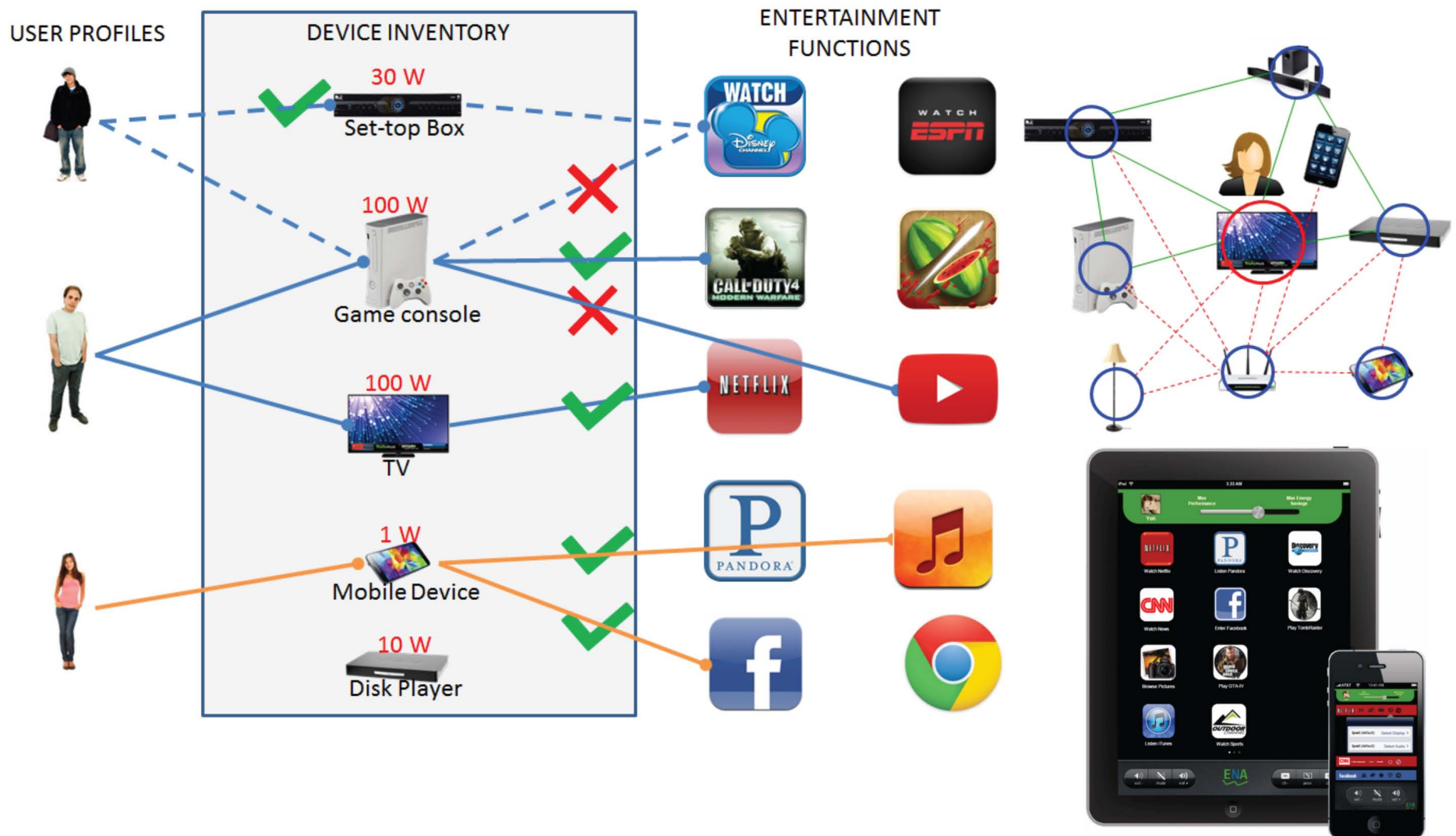
Clark Brockman, AIA LEED Fellow
Principal, SERA Architects

Personal Energy Footprint Management: User Behavior Adaptation



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Internet of Entertainment: Negotiation Among Devices, Users and Contents

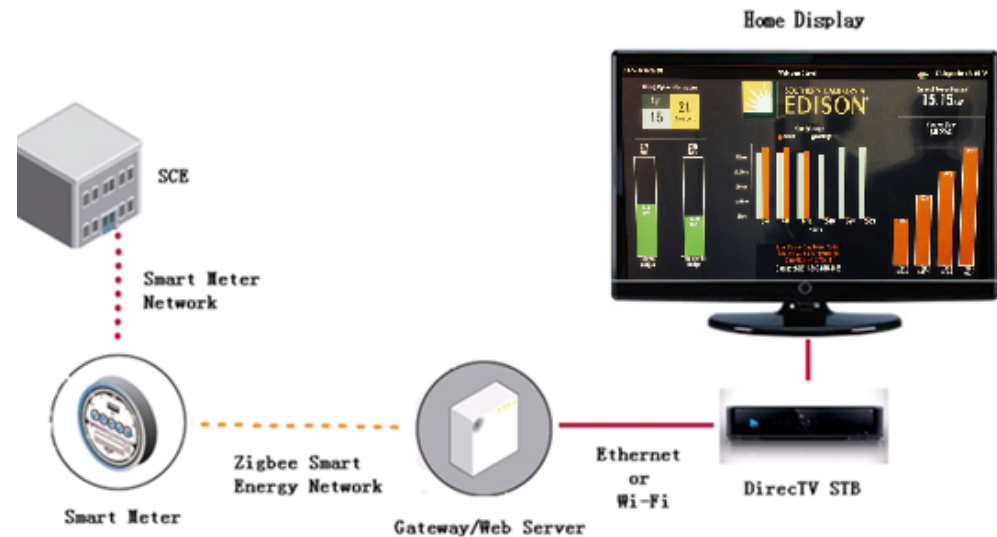


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Energy Channel via STB

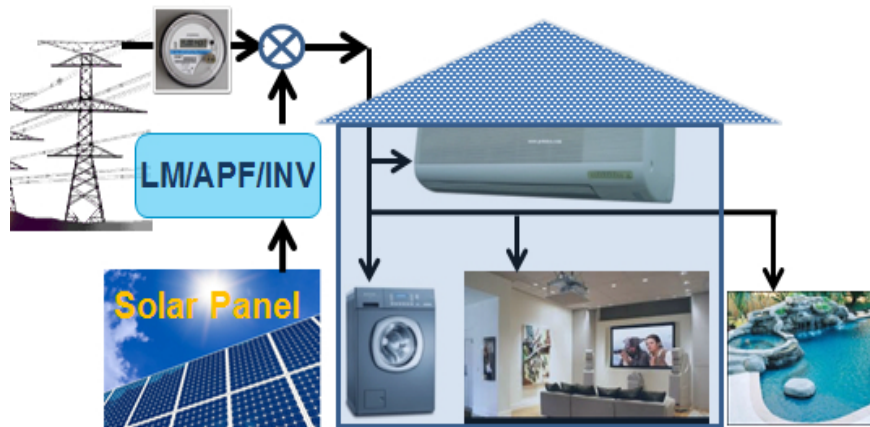
- A unique energy information display channel
- Demand response pilot program
- Cross-platform display



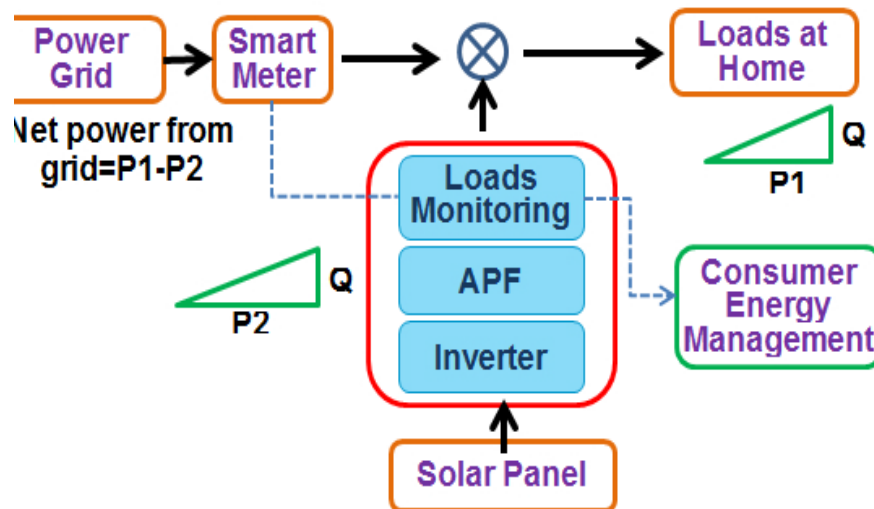
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Improving Efficiency with Power Quality Factor Correction in Real Time



(a)



(b)

- Inverter-integrated active power factor correction
- Load signature analysis for wireless load monitoring and control
- Integrated design and control of HVAC and storage for shifting peak demand



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Thank You

Please join us at

California Plug Load Research Center

(Cal-Plug)

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